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I. Title Page

A. Title of Project: Battle Creek Salmon and Steelhead Restoration Project (Project)

B. Name, Address, Phone, FAX, E-Mail of Primary Contacts

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C. Participants and Collaborators - The proposed Project is a collaborative effort negotiated by: US Bureau of Reclamation (USBR); US Fish and Wildlife Service (USFWS); National Marine Fisheries Service (NMFS); California Department of Fish and Game (CDFG); and Pacific Gas & Electric Co. (PGE). In addition, the proposed Project's development was guided over the past two years by the: Battle Creek Working Group[1], Battle Creek Watershed Conservancy[2], and the Battle Creek Project[3].

D. General Project Description/Executive Summary - Battle Creek is a cold, spring-fed stream with exceptionally high flows during the dry season (250 cfs) making it the only Sacramento River tributary resistant to drought. Its remote, shaded canyons are similar to the once-productive salmon streams now blocked by Shasta Dam. Extensive historical records document Battle Creek's enormous potential for all four races of salmon and steelhead. The proposed Project seeks to realize this potential in a manner that complements both existing hydropower production[4] and aquaculture[5] development in the watershed. The proposed Project would implement the following changes to PGE's facilities and operations on Battle Creek's North and South forks and key tributaries[6]: 1) decommissioning five diversion dams (Wildcat, Coleman, South, Lower Ripley, and Soap Creek diversion dams); 2) laddering three diversion dams and screening their associated diversions (Eagle Canyon, North Battle Creek Feeder, and Inskip diversion dams); 3) increasing flow releases from all remaining diversion dams in the Battle Creek's anadromous fish reaches; and 4) constructing powerhouse tailrace connectors to eliminate redundant screening requirements and mixing of North and South fork waters. These actions will result in 42 miles of accessible anadromous fish habitat and improved water quality for Coleman National Fish Hatchery (CNFH). USBR is proposing to implement the physical modifications and PGE is proposing to implement the operational changes. PGE's water rights will be dedicated to fish and wildlife resources pursuant to Water Code Section 1707 for decommissioned dams, and, to the extent possible under the law, for remaining dams.

II. Proposed Scope of Work

USBR will coordinate and implement all environmental permitting, design, procurement and construction work. Much of USBR's work will utilize completed or ongoing engineering work being

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[1] The Battle Creek Working Group includes stakeholder representatives from the state and federal resource agencies, and fishery, environmental, local, agricultural, power, and urban stakeholder communities.

[2] The Battle Creek Watershed Conservancy, a 501(c)3 nonprofit organization, is comprised of local residents who for nearly two years have been seeking local solutions which are consistent with its charter goals of "preserving the environmental and economic resources of the watershed through responsible stewardship, liaison, cooperation, and education." Over 100 individuals attended the Conservancy's first annual meeting.

[3] The Battle Creek Watershed Project started in early 1997 as a result of funding to the Western Shasta Resource Conservation District to assist landowners in forming a watershed conservancy.

[4] PGE owns and operates eight diversion dams in the anadromous fish reaches of Battle Creek and its tributaries.

[5] USFWS's Coleman National Fish Hatchery, CDFG's Darrah Springs Hatchery, and 12 private trout rearing facilities operated by Mr. Lassen Trout Farms, Inc. are located in the Battle Creek watershed.

[6] See "Battle Creek Schematic" on Page 5 of attached "Battle Creek Salmon and Steelhead Restoration Plan".

accomplished by USBR and California Department of Water Resources under the guidance of the Battle Creek Working Group (see Section IV. C. - Table 1). In general, work accomplished in: 1) 1999 will include securing necessary environmental permits, including NEPA/CEQA, and completing design work for facilities to be altered in year 2000; 2) 2000 will include completing design work for facilities to be altered in year 2001 and constructing initial facility alterations; and 3) 2001 will include constructing remaining facility alterations[7].

III. Location and/or Geographic Boundaries of the Project

Battle Creek flows into the Sacramento River at river mile 272 near the town of Cottonwood and forms the border between Shasta and Tehama counties. It drains a 356 square mile area that is dominated by the volcanic slopes of Mt. Lassen[8]. The proposed Project is located in the anadromous fish reaches of Battle Creek and its tributaries[9] (USGS Quads: Shingletown, Manton, Finley Butte). Natural barriers to anadromous fish migration in the form of large waterfalls are located on both the North and South forks at river miles 13.48 and 18.85, respectively[10]. Specifically, the proposed Project will accomplish the subsequent actions at the following locations: 1) increased flows in Battle Creek, including both its North and South forks up to the natural barriers, Soap Creek, Ripley Creek, and Baldwin Creek; and 2) altered or decommissioned PGE facilities, including Coleman, Inskip, and South diversion dams on the South Fork; Wildcat, Eagle Canyon, North Battle Feeder diversion dams, and Eagle Canyon spring collectors on the North Fork; Lower Ripley Dam on Ripley Creek; and Soap Dam on Soap Creek. In addition, extensive work is proposed to decommission South and Wildcat canals.

IV. Ecological Objectives and Related Benefits

A. Primary Ecological/Biological Objectives - The primary objective is to restore and maintain those ecosystem processes that provide for the needs of the animals using the ecosystem; especially focusing on species that indicate ecosystem health and are prioritized for restoration by CALFED and other agencies. Restoring the remnant populations of naturally spawning winter- and spring-run chinook salmon and steelhead that still occur in Battle Creek (USFWS survey observations) requires restoring streamflow and stream channel processes while reducing the extent and influence of dams impairing upstream and downstream passage of anadromous fish. Restoring ecological processes will allow habitats to sustain themselves. Battle Creek is unique in its resistance to the adverse effects of drought on winter-run chinook salmon because its large summer streamflow is dominated by cold springs. The Creek has historically supported significant numbers of winter-run chinook and shares a number of important characteristics with the former habitats above Shasta Dam. Presently, the main population of winter-run spawns in the Sacramento River which is not resistant to extensive droughts which results in exposing the population to periods of severe mortality due to elevated temperatures.

Benefits of Increased Flows - Important biological objectives for the flows prescribed under all year types for Battle Creek include, maintaining ecologically stable year-round spawning and incubation and rearing habitat for all the species of anadromous fish, accommodating migration over boulders and debris accumulations in the canyons, sustaining a healthy riparian corridor that will contribute to shading, releasing cool spring water to the stream, maintaining a streamflow in the summer that closely emulates the natural

[7] See attached "Battle Creek Restoration" timetable for specific tasks and schedules.
[8] See "Figure 1" on Page 2 of attached "Battle Creek Salmon and Steelhead Restoration Plan".
[9] See "Battle Creek Schematic" on Page 5 of attached "Battle Creek Salmon and Steelhead Restoration Plan".
[10] See "Battle Creek Schematic" on Page 5 of attached "Battle Creek Salmon and Steelhead Restoration Plan". The proposed Project does not include modifications above these waterfalls.

flow and the original stream's temperature regime[11]. The small dams allow the stream to still exhibit natural season streamflow patterns in winter and spring including peak flow events that support many ecological functions essential to the health of anadromous fish populations.

Benefits of Dam Removal - Integrating the hydroelectric project with the restoration effort includes removing dams where the hydroelectric potential is small relative to the whole system (approximately one percent) and the ecological needs at the site are high for safe passage of fish either upstream or downstream based on the diversion's location at: 1) gateways to habitats essential for survival (Coleman and Wildcat diversion dams); 2) headwaters with low natural flow (South Diversion Dam); or 3) at large, cold springs needed for tributary habitat, reducing temperature gains, or avoiding O&M (Eagle Canyon Springs Collector System, Soap and Lower Ripley Creek). Eagle Canyon Dam was initially proposed for removal because of its location in prime drought resistant habitat. In addition, there were major concerns over reliable performance of the screen, ladder and water release system operation to prevent harmful flow fluctuations. All concerns relate primarily to the site's poor access and its flood prone location. PGE is unwilling to remove the dam for the stated reason that it makes an economically essential contribution to hydro production in the scaled-down power system. PGE responded to environmental concerns by designing the facilities to resist flood, and by incorporating: 1) remote operation technology that shuts off the diversion if the screen fails; 2) ramping rates to prevent excessive flow fluctuations; and 4) operation, monitoring and correction if required to comply with state and federal endangered species acts.

Benefits of Powerhouse Tailrace Connectors - The proposed Project restores stream channel processes by eliminating commingling of transbasin diversion waters in natural channels. This is accomplished by bypassing the tail races from two powerhouses on the South Fork around the stream channel to the downstream canal. Because anadromous salmonids are exceptionally good at returning to spawn in the stream where they were born, they are extremely vulnerable to false attraction to these powerhouse tail races that relocate their natal water to low elevation stream reaches having lower quality and ecological stability than other stream reaches. Isolating powerhouse water from the stream also improves the quality of CNFH's main water supply and reduces screening requirements by over 60 percent.

Benefits of Screens and Ladders - Presently there are eight diversion dams where anadromous fish migrate that handle a total volume of over 800 cfs of water that would have to be screened. Removing the dams and installing the connectors brings the existing normal screening requirements down to 265 cfs and eliminates redundant screening of water. Finally, the remaining screens are at just three sites, each located within 15-30 minutes of the local PGE maintenance center.

B. Scientific Hypotheses - Restoring key ecosystem processes by reducing the extent and influence of dams impairing streamflow and safe fish movement can produce a rehabilitated system having sufficient function and ecological stability to recover healthy populations of all races of the chinook salmon and steelhead to upper Battle Creek. Restoration should be successful if key attributes closely resemble that of the original condition as well as nearby functioning reference streams having some biological and physical similarities to Battle Creek[12]. Recent increases in streamflow and shutting down of diversions over a three year interim program demonstrated significant habitat improvements in 17 miles of Battle Creek (up to 500 percent increase in theoretically usable habitat) and documented use of the habitat by all races of chinook salmon and steelhead.

[11] See Pages 46-89 and Tables 23 and 24 (Pages 77-78) of attached "Battle Creek Salmon and Steelhead Restoration Plan" for a more detailed description.
[12] See Pages 47-48 and Figures 5-14 (Pages 54-63 of attached "Battle Creek Salmon and Steelhead Restoration Plan" for a more detailed description.

C. Relationship to Other Projects - As shown in Table 1, significant foundation work has been funded by CALFED, CVPIA, CDFG, USBR and CUWA.

Table 1 - Funded Battle Creek Restoration Activities

Description	Applicant	Funding Source	Status/Relationship to Proposed Project
Interim Flow Agreement	USBR	CVPIA	Agreement was initiated in 1995 and was recently extended to 2001.
Engineering Investigation of Anadromous Fish Passage in Upper Battle Creek	DWR	CUWA	Final Reconnaissance Report completed and submitted with this application. Also includes collecting water temperature data at 28 stations and flow data at four stations.
Decommissioning Report for Select Facilities	USBR	USBR	Final Reconnaissance Reports are completed and submitted with this application.
Battle Creek Salmon and Steelhead Restoration Plan	Kier Associates	CUWA	Final Report is completed and submitted with this application.
Hydrologic Investigations	RMI	USBR	An independent hydrologic and economic model has been developed and was used extensively during negotiations.
Winter-/Spring- Run Monitoring	USFWS	CVPIA	Includes three ongoing studies which establish baseline data.
Watershed Stewardship	Battle Creek Watershed Conservancy	CALFED	Awaiting CALFED contract to implement upstream restoration actions.
Battle Creek Meadow	Landowner	Landowner	Restoration of a critical meadow on the South Fork to improve summer flows and temperatures.
CNFH Intake Screen Improvements	USFWS	CVPIA	Most intakes improved to ensure safer passage to restored upstream habitat. Additional work will be accomplished this Spring.
Battle Creek Watershed Project	Western Shasta Resource Cons. District	CUWA/ CVPIA	Significant progress has been made in coordinating Project development with local community.

V. Monitoring and Data Collection Methodology

Table 2 below describes an initial compilation of monitoring programs that needs to be refined through a continuation of the collaborative process between the resource agencies and PGE. The programs are consistent with existing monitoring programs for the interim water acquisition program and monitoring programs applied to similar CALFED projects affection similar species assemblages. Most of the monitoring listed below is being carried out under existing funding and will contribute to providing important baseline data. However, funds are requested for additional monitoring since the proposed Project will result in a much larger study area with the proposed improvements to fish passage at Eagle Canyon Diversion Dam on the North Fork and Coleman Diversion Dam on the South Fork. The main assessment period is ten years with the most focused monitoring occurring in the first half of that period.

Table 2 - Summary of Ecological/Biological Objectives, Associated Hypotheses and Monitoring Parameters and Approaches

Biological/Ecological Objective Question to be Evaluated/ Hypothesis	Monitoring Parameter(s) and Data Collection Approach	Data Evaluation Approach	Comments
Anadromous Fish Surveys			
Immigration of adult natural spawners of all species of Oncorhynchus into the Battle Creek system will increase through time to steadily colonize the new habitat.	Estimates of the number and species of upstream migrant salmonids at CNFH fish ladder to Battle Creek via continuous use of underwater video and intermittent use of a fish trapping facility (USFWS in progress)	Data will be sorted according to the species, type (hatchery vs. wild as indicated by marking), time of passage. Counts will be shown as actual, partial and extrapolated depending upon conditions for counting. The trend will be examined for cohort replacement rates.	Partial counts occur during periods of high flow requiring estimated total counts to contain extrapolations. Anticipated CAMP project.
Adult natural spawners of all species of Oncorhynchus will not be impaired from distributing themselves to suitable stable habitat throughout the anadromous reaches of Battle Creek.	Relative abundance and distribution of adults the Battle Creek watershed estimated via snorkel, carcass, redd and aerial surveys (USFWS, DFG).	Data will be sorted by estimated percent of total species observed by reach by method. The distribution will be compared to the availability of suitable habitat in the system.	Through time, monitoring effort will select the method(s) that produces a relative measure of distribution that is reliable & cost effective for the types of conditions in this watershed.

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The adult natural spawners that distribute themselves throughout Battle Creek will successfully reproduce.	Relative abundance, distribution and emigration timing of juveniles from the system year-round . Screw trap installations should be operated on the forks and the mainstem using CAMP reporting methodology (USFWS).	Data will be sorted by species, size and time of emigration. Only data collected from upstream of CNFH will be evaluated for natural production. Adult spawner data distribution & environmental conditions will be evaluated.	Only partial estimates will be available during high flow events for some of the stations for safety and equipment reasons. Anticipated AFRP project.
Effectiveness monitoring on PG&E facilities			
Screens will consistently attain screen criteria that avoids jeopardizing the existence or interfering with the recovery of any population of anadromous fish species that occurs near the installation now or in the future	Measurements will include screen approach, sweeping and bypass velocities during numerous periods of maximum diversion each year. Water surface elevation differences on the inlet and outlet side of screens will be recorded continuously by remote sensing instruments	Measurements will be evaluated against screen criteria. The variability of fish screen performance will be examined under different diversion rates and debris loading conditions. O&M records and remote sensing data will be examined for the frequency and duration equipment operated out of specification	O&M records, hydraulic performance of the screen and evaluation reports will be made available to FERC and agencies. Primary station for long-term monitoring is mainstem Sacramento River. Anticipate CAMP responsibility.
Ladders will consistently attain ladder design criteria that avoids jeopardizing the existence or interfering with the recovery of any population of anadromous fish speccies that occurs near the installation now or in the future.	Measurements of velocity and flow collected from each ladder at several stage heights to evaluate hydraulic performance and reliability over the full range of operating conditions. Water surface elevations will be continuously monitored at various locations within each new fish ladder via remote sensing to identify debris problems. Data collected on biological performance of the ladder will include numbers and timing of adult passage using video or fish counters over short-term assessment period (3 years).	Velocity and flow measurement will be obtained for each of the old fish ladders prior to removal to establish a baseline for comparison. O &M records will be evaluated for frequency and duration the facility did not attain design specifications due to debris or other influences. Fish counts will be used to evaluate the upstream distribution of fish.	O&M records, hydraulic and biological performance of the ladder and evaluation reports will be made available to FERC and agencies
The operation of the release valves at the remaining dams will attain the minimum flows and proper ramping rates that avoid conditions jeopardizing the existence or interfering with the recovery of any population of anadromous fish species that occurs near the installation now or in the future.	Flows will be continuously measured at both the spillway and release valves to produce accurate estimates of total flow; especially during operations producing flow fluctuations. Rating curves will be established for the dam and spillway release ports or the downstream channel. Biological performance of selected ramping rates will be developed using field survey methods focussing on less mobile early life stages of fish after the perimeter of the stream is dewatered.	Flow data will be compared to requisite flows and ramping rates developed for the project. Biological data on distribution and abundance of species throughout the system will contribute to the evaluation. Ramping rates will be developed that minimize the rate the wetted perimeter of the stream is dewatered ; especially at flows where there are large changes in wetted perimeter with changes in stage.	Continuous records of releases and spills records to document requisite flow, flow fluctuation and ramming limits (PG&E for FERC). Reports will be made available to agencies.
Physical Characteristics			
The stream exhibits natural streamflow patterns in the in the winter and spring and is drought resistant.	Establish two streamflow monitoring stations near the terminus of the North Fork and South Fork (conducted by DWR)	Develop a relationship between the flow in the forks and the long -term record from the main stem (USGS). Compare results to the hydrology model	
The temperature regime of the stream will be stable and gradually become cooler with increasing elevation , spring water contribution and cooler micro-climates producing reaches suitable for each species of Oncorhynchus in the system , even during drought	The existing DWR study covers 28 stations for water temperatures should continue for a period of 5 years which includes approximately 2 years of pre project conditions. Available climate aid in comparing different years	Comparison of pre and post project temperature data among years with similar climate.	
The reconfiguration of clusters of debris and boulders in canyons that impair fish passage at low flow will not worsen from that documented during the drought years in the 1980's .	Examine clusters of debris and boulders in canyons using observation during ground and aerial surveys for fish distribution. Make detailed inspections of sites that undergo major adverse reconfiguration .	Identify problem reconfiguration of debris that are not flushed out during peak flows and estimate flows required to provide passage and feasibility of mechanically initiating debris movement.	

VI. Technical Feasibility and Timing

A. Alternatives Evaluated and Not Selected - The Battle Creek Working Group took a consensus approach, open to all stakeholders to develop a workable range of alternatives[13]. The suggested changes to PGE's Battle Creek Hydroelectric Project ranged from "no action" to decommissioning the entire project. This wide range of alternatives was narrowed through monthly Working Group meetings over the past two years. The elimination of the Hydroelectric Project was determined to be undesirable, primarily based on input from the local community and adjacent counties. Alternatively, specific mandates for the recovery of salmonid species jeopardized with extinction, and a desire to have healthy wild salmonid populations determined that "no action" was clearly undesirable. The resultant recognition was that the restoration effort would consider a middle range of alternatives that maintained a balance between hydropower production and effective recovery of biological resources. The presence of natural barrier falls which prevent anadromous fish passage, on both the South and North forks, greatly assisted in helping to achieve this balance. For each PGE diversion dam below these natural barriers, two alternatives were considered: 1) decommissioning; or 2) screening and laddering. The resulting proposed Project is the result of consideration of substantial biological, engineering, and economic information developed to support the negotiations[14].

B. NEPA/CEQA Documentation - The Battle Creek Working Group's Environmental Compliance and Permitting Subcommittee (Subcommittee) has been working for the past year to develop a compliance and permitting guidance document for the proposed Project which is currently being reviewed as a final draft. The Subcommittee includes representatives from USBR, USFWS, NMFS, CDFG, and PGE who are familiar with compliance and permitting issues. This effort has proven valuable in identifying issues and respective roles of participating agencies. USBR will be the federal Lead Agency and will oversee preparation of an Environmental Assessment (EA) to determine whether the proposed action will have the potential to significantly affect the human environment. Because of the substantial level of analysis that has already been prepared regarding the proposed Project and the close involvement of USFWS, NMFS, and CDFG in the proposed Project' design, measures have been identified and incorporated into the proposed Project's description that should ensure that the proposed Project will not have the potential to significantly affect the human environment. Therefore, it is expected that USBR will prepare a finding of no significant impact (FONSI) to comply with NEPA. Completion of the NEPA process is expected to take 9 months. PGE, as owners of the hydropower facilities on Battle Creek, is expected to apply to the Federal Energy Regulatory Commission (FERC) for a hydropower operation license amendment; thereby triggering the need for FERC to also comply with NEPA. Therefore, it is expected that FERC will be identified as a Cooperating Agency and participate in USBR's NEPA process and will use USBR's EA and issue a FONSI for its NEPA compliance.

The California State Water Resources Control Board (SWRCB) will be required to comply with CEQA because it will be requested to issue certification of compliance with the California state water quality plan, pursuant to Section 401 of the Clean Water Act. The CEQA document will be prepared jointly with the NEPA document. SWRCB will be the CEQA Lead Agency and will be responsible for ensuring that the EA prepared by USBR's consultant complies with the requirements of CEQA for preparation of an Initial Study. It is expected that SWRCB will prepare a Mitigated Negative Declaration to comply with CEQA. The CEQA process is expected to run concurrently with the NEPA process and be completed within 9 months.

[13] See Pages 29-32 of attached "Battle Creek Salmon and Steelhead Restoration Plan" for a more detailed description.
[14] See attachments.

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C. Permits and Agreements Necessary for Implementation - The following is a list of environmental compliance needs for the proposed Project. The environmental compliance and permit processes are expected to be completed at or within 2 months after completion of the NEPA/CEQA process.

- Section 7 of the federal Endangered Species Act (ESA)
- Section 404 of the Clean Water Act
- Section 106 of the National Historic Preservation Act (NHPA)
- Fish and Wildlife Coordination Act (FWCA)
- Section 401 of the Clean Water Act
- Federal Energy Regulatory Commission (FERC) License Amendment
- California Water Rights - It is expected that PGE and CDFG will apply to SWRCB for the transfer and/or dedication of appropriate water rights for in-stream uses.
- Section 2080.1 and Section 2081 of the California Endangered Species Act (CESA)

D. Nature and Approach to Resolving Outstanding Implementation Issues - The Battle Creek Working Group's Environmental Compliance and Permitting Subcommittee (Subcommittee) will continue to meet to assist USBR with ensuring both timely environmental compliance and timely acquisition of necessary permits. In addition, the Battle Creek Watershed Conservancy will play a key role in advising the local community of the status of implementation.

VII. Cost and Cost-Sharing

The total cost of the proposed Project is $50,509,000, of which $26,958,100 (53%) is requested from CALFED[15]. The requested funds would be used for three purposes: 1) $20,821,000 is to be managed by USBR to pay for the costs for all work associated with decommissioning facilities, constructing screens, ladders, and connectors (these costs include design data collection, permitting, NEPA and CEQA compliance, design, and construction contract administration); 2) $1,000,000 is for biological and ecological monitoring; 3) $2,137,100 is to be paid to PGE as compensation for the foregone energy due to increased flow releases provided for restoration purposes under the proposed Project (PGE will provide the remaining 90% of the increased flows without compensation); and 4) $3,000,000 would be placed in an escrow account and used solely for purposes of purchasing additional flows if the Resource Agencies determine such flows are necessary during the first 10 years of initiation of modified flows[16].

A. Total Budgeted Costs Requested From CALFED - Tables 3 and 4 below provide breakdowns of requested CALFED funding for each task by category and by quarter.

Table 3 - Total Budget (CALFED funds only - $1,000)

Task	Direct Labor Hours	Direct Salary and Benefits	Service Contracts	Material and Acquisition Costs	Misc. And Other Direct Costs	Overhead and Indirect Costs	Total Cost
Task 1 - Remove Wildcat Dam	12,000	420	2,100	60	60	100	2,740
Task 2 - Construct Eagle Canyon Dam Screen and Ladder	8,571	300	1,500	40	40	70	1,950
Task 3 - Construct North Battle Creek Feeder Dam Screen and Ladder	4,857	170	850	20	20	40	1,100
Task 4 - Remove South Dam	13,143	460	2,300	60	60	110	2,990
Task 5A - Construct South Powerhouse Tailrace	24,286	850	4,260	365	110	200	5,785

[15] See Table 5 for cost sharing information.

[16] Providing these funds for potential additional water acquisition was critical to reaching closure on the negotiations. After the 10th year, all uncommitted funds would revert to CALFED. It is anticipated that the FY 1998 Water Acquisition Fund may be an appropriate source of funds for this item ($3,000,000) and the payment to PGE ($2,137,100).

Bypass, 80 cfs Fish Screen; Task 5B Construct Inskip Dam Ladder							
Task 6A - Construct Tailrace Connector Between Inskip Powerhouse and Coleman Canal; Task 6B - Remove Coleman Dam;	14,000	490	2,470	70	70	120	3,220
Task 7 - Construct Penstock Bypass System at Inskip Powerhouse	13,714	130	700	20	20	30	900
Task 8 - NEPA/CEQA Compliance Activities/Permitting/Monitoring	19,429	1,180	500	90	90	160	2,020
Task 9 - Project Management Tasks 1 - 8	14,286	796	—	80	80	160	1,116
Column Totals	124,286	5,296	14,680	805	550	990	21,821

Table 4 - Quarterly Budget (CALFED Funds Only - $1,000)

Task	J-M 1999	A-J 1999	J-S 1999	O-D 1999	J-M 2000	A-J 2000	J-S 2000	O-D 2000	J-M 2001	A-J 2001	J-S 2001	O-D 2001	Total Budget
Task 1 - Remove Wildcat Dam	20	80	70	70	120	940	1,440	0	0	0	0	0	2,740
Task 2 - Construct Eagle Canyon Dam Screen/Ladder	10	60	50	60	60	690	790	230	0	0	0	0	1,950
Task 3 - Construct N. Battle Feeder Dam Screen/Ladder	0	0	0	0	10	40	30	40	240	340	330	70	1,100
Task 4 - Remove South Dam	20	70	80	70	130	840	1,330	450	0	0	0	0	2,990
Task 5A - Construct South Powerhouse Tailrace Bypass, 140 cfs Fish Screen; Task 5B Construct Inskip Dam Ladder	40 10	110 40	110 40	120 40	130 60	840 360	840 390	840 110	850 0	855 0	0 0	0 0	5,785
Task 6A - Construct Tailrace Connector Between Inskip Powerhouse and Coleman Canal; Task 6B - Remove Coleman Dam;	50 0	150 0	140 0	260 0	580 10	610 30	610 30	200 40	0 50	0 320	0 350	0 100	3,220
Task 7 - Construct Penstock Bypass System at Inskip PH	0	0	0	0	30	30	30	80	190	210	200	130	900
Task 8 - NEPA/CEQA Permitting/Monitoring Activities	200	320	400	300	100	100	100	100	100	100	100	100	2,020
Task 9 - Project Management Tasks 1 - 8	65	105	85	105	95	95	95	95	94	94	94	94	1,116
Total													21,821

B. Funding Commitments - As shown below in Table 5, the proposed Project is a collaborative partnership that includes funding from three sources: PGE, CALFED, and a Third Party. Third Party funding was a critical to reaching closure on the negotiations, and is being sought concurrently with this application for CALFED funding.

Table 5 - Cost Sharing

Project Feature	PGE	CALFED Request[17]	Third Party[18]	Total
Flows (Foregone Power)	$20,050,900[19]	$2,137,100[20]	$0	$22,188,000
Decommissioning/Screens and Ladders/Connectors	$0	$20,821,000[21]	$0	$20,821,000
Monitoring	$500,000	$1,000,000	$0	$1,500,000
Future Water Acquisition Fund	$0	$3,000,000[22]	$0	$3,000,000
Adaptive Management Fund	$0	$0	$3,000,000	$3,000,000
Total $$ Contribution	$20,550,900	$26,958,100	$3,000,000	$50,509,000
Percent Contribution	41%	53%	6%	100%

[17] It is assumed that it would be appropriate to fund $5,137,100 of total $26,958,100request out of CALFED's FY 1998 Water Acquisition Fund.

[18] Private Foundations have expressed an interest in providing these monies which would be placed in an escrow account and used solely for Battle Creek salmon and steelhead restoration purposes; unused funds will revert to the Third Party at the end of the current FERC license term.

[19] This amount reflects lost revenues to PGE due to PGE providing 90% of the new environmental water without compensation.

[20] This amount reflects compensation to PGE for providing 10% of the new environmental water.

[21] $7,530,000 of this amount is for decommissioning, $5,691,000 is for screens and ladders, and $7,600,000 is for connectors.

[22] Monies to be placed in an escrow account and used solely for purposes of purchasing additional flows, if the Resource Agencies determine such flows are necessary during the first 10 years of initiation of modified flows. After the 10th year, all unexpended funds would revert to CALFED.

C. As shown in Table 4, the Project's comprehensive scope and associated construction constraints will necessarily require a phased implementation approach over 3 construction seasons to complete the entire project[23]. Consideration was also given to incrementally fund the proposed Project, but proved impracticable due to PGE's justified unwillingness to commit to restoration actions based on the promise of future unsecured funding. In addition, the resource agencies believed that given the importance of Battle Creek in aiding to the recovery of endangered salmon and steelhead runs, it was clearly preferable from a biological perspective to negotiate as complete of a restoration package as possible for the following reasons: 1) remnant populations of fish in Battle Creek need restored habitats as soon as possible to avoid some of the survival risks inherent in the present habitat; 2) winter-run chinook salmon populations need a drought resistant habitat in the upper Sacramento River system as soon as possible to decrease their vulnerability to droughts; 3) a comprehensive approach provides more opportunity to implement the proposed Project in a timely fashion to maximize biological benefits and save monies by decreasing mobilization time and costs and implementing components in a parallel sequence; and 4) perhaps most importantly, PGE's willingness to work cooperatively towards a comprehensive cost effective and equitable resolution for both hydropower and fisheries may not be shared by future owners.

VIII. Local Impacts, Support and Involvement

A. Battle Creek forms the boundary line between Tehama and Shasta counties. Both of these counties Resource Conservation Districts have been active participants in the Battle Creek Working Group. Members of both Tehama County and Shasta County Boards of Supervisors are aware of planning for restoration of Battle Creek and have seen conceptual proposals in writing over the past two years that are substantially consistent with the proposed Project. Based on these initial contacts, we understand that the primary concerns will be whether the proposed Project results in: 1) either increased costs or decreased revenues to the counties; 2) decreased employment in the counties; and 3) water exports out of the counties. The proposed Project has been designed to avoid these concerns. Since recently completing the negotiations, both counties have been contacted and briefings with the counties planning staffs and Board of Supervisors are scheduled to review the specific proposed Project.

B. Local groups aware of the overall restoration of Battle Creek include: The Battle Creek Watershed Conservancy[24]; Tehama Fly Fishers; Shasta Fly Fishers; Sacramento River Preservation Trust, Boole Ditch Water Users; Crooker/Harrison Water Users; Rock Creek Water Users; Manton Elementary School Board; Mineral Elementary School Board; Mill Creek Conservancy (Adjacent Watershed); Deer Creek Watershed Conservancy (Adjacent Watershed); Mineral Home Owners Association; Tehama County Cattlemens Association; NorCal Guides; Manton Grange; Mt. Lassen Historical Society; and Manton Historic Society. None of these groups have come forward opposing restoration of salmon and steelhead to Battle Creek.

C. Both adjacent and affected landowners are aware of the restoration project and in general support the proposed project provided consideration is given to their needs during Project implementation. No landowners have come forward opposing the overall restoration of salmon and steelhead to Battle Creek (see attached letter from Battle Creek Watershed Conservancy dated January 13, 1999).

D. Public outreach will expand during the spring of 1999 and canvas the watershed with informational meetings. Speakers will be available for all groups of the community desiring presentations to inform their members of the specific restoration Project. Print and media coverage will reach residents and landowners that are not members of local community groups.

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[23] See attached schedule entitled,"Battle Creek Restoration". Note that, with each construction season, more usable anadromous fish habitat made available.
[24] See attached Battle Creek Watershed Conservancy letter dated, January 13, 1999.

E. We are not aware of any potential negative third party impacts. The Project does not include purchasing PGE lands. We anticipate, however, positive short-term third party economic impacts for the local communities (primarily Manton) during construction.

IX. Applicant's Ability

USBR will be the lead agency to implement all facility removal and modification activities associated this proposal. This includes design data collection, permitting, NEPA and CEQA compliance, design, construction, and construction contract administration. All construction will be performed by construction contractors procured through a competitive bidding process. The use of A&E contractors for design activities will be considered based on qualifications, cost, quality, and timeliness considerations as compared to the use of existing USBR resources on staff. Close coordination with PGE, CDFG, California Department of Water Resources (DWR), USFWS, and NMFS will be maintained to optimize the designs and to allow in-river construction to be performed in the most efficient and expeditious manner, having minimal impact on fishery resources. Because of the excellent working relationship which developed between the DWR, PGE, and the local affected property owners during the planning phase of this project, USBR will contract with the DWR to facilitate local public coordination and provide design support and peer review for implementation activities.

USBR and DWR have a wide range of experience in providing concept studies, final designs, model studies, and construction support for fish related facilities. In addition, it is anticipated that NMFS, USFWS, and CDFG will continue to provide their expertise to help guide the effort. The types of facilities which have been studied and designed include: (1) fish passage, (2) fish screening, and (3) fish barriers. Fish passage facilities have been designed for many species and the facilities include: (1) ladders, (2) instream gradient structures, and (3) lifts. Fish screening facilities include: (1) in-canal screens with fish bypasses, and (2) screens located on a river, lake, or slough.

X. Compatibility with Non-Ecosystem Objectives - The Project will not result in conflicts with other CALFED objectives. The water to be redirected to Battle Creek for environmental purposes is water that previously was non-consumptively used by PGE by flowing in PGE's canal system and returning to Battle Creek after it flowed through PGE's powerhouses. The Project does not effect the net amount of water downstream in Battle Creek and subsequently, the Sacramento River. The Project should benefit CALFED's water supply reliability objective by contributing to recovery of 4 races of Central Valley salmon and steelhead, all of which either currently, or in the future, could impact water supply reliability for water users throughout the Central Valley watershed.

DA ①

January 20, 1999

BATTLE CREEK RESTORATION PROJECT: STATUS UPDATE

Background: In early December, the attached status report on the proposed Battle Creek Restoration Project (proposed Project) was provided to the Integration Panel. The purpose of this status update is to provide: 1) current information on the negotiations between National Marine Fisheries Service, US Fish and Wildlife Service, California Department of Fish and Game, US Bureau of Reclamation, and Pacific Gas and Electric Company; and 2) clarifications regarding the designated action proposal that is being submitted today for your consideration.

Status of Negotiations: As a reminder, the negotiations are focusing on restoring over 42 miles of anadromous fish habitat by correcting fishery problems associated with hydropower diversion dams due to ineffective fish ladders, unscreened diversions, and inadequate streamflows. In total, eight diversion dams are being assessed for laddering and screening or alternatively, for decommissioning. The parties have held 10 negotiating sessions since late-September and will reconvene today via conference call to tie up a few loose ends. The Resource Agencies are pleased to report that the two significant outstanding issues identified in the early December status report regarding the appropriate remedy for one diversion site, and the methodology used to determine appropriate compensation for purchasing water have been fully resolved. The remaining issues pertain to agreeing to an appropriate: 1) protocol for expending contingency funds that are proposed to be established as part of the proposed Project; and 2) process for transferring water from PGE ownership to instream uses.

Clarifications Regarding Today's Battle Creek Designated Action Proposal: The proposed Project described in our proposal is substantially consistent with the consensus project being negotiated. The negotiating parties, including PGE, have reached agreement on all flow increases, facility modifications, and cost sharing arrangements described in the proposal once consensus is reached on the few items listed above. However, it is important to state that PGE has not formally reviewed today's submittal at this time due to the continuing negotiations. It is anticipated that PGE will want to play a role in developing the monitoring program that is described in the submittal and may disagree with some of the permitting requirements that are outlined. Consistent with all other aspects of the proposed Project's development, the resource agencies look forward to having PGE involved in these issues.

December 1, 1998

BATTLE CREEK RESTORATION PROJECT: STATUS REPORT

"Winter-run chinook salmon are unique to the Sacramento River and are adapted to spawn in the cold, spring-fed rivers now located above Shasta Dam. They are maintained through extraordinary effort in artificial cold-water habitat below Keswick Dam in the Sacramento River and in a special hatchery program. Because they are so vulnerable to disasters (e.g., a toxic spill from Iron Mountain Mine, just upstream), at least one naturally reproducing population needs to be established to reduce the probability of extinction. Battle Creek, a cold-water stream to which winter-run chinook have been deliberately denied access in the past, is the best and probably only site available for such restoration." Source: CALFED Strategic Plan for Ecosystem Restoration, Agency Review Draft: November 1998, p. 5-10.

Background: Overall Battle Creek restoration activities are being developed and coordinated through the Battle Creek Working Group[1] to include all interested parties and the local community in the planning and implementation processes. The Working Group has focused primarily on developing the necessary information to support negotiations for a comprehensive package to restore over 42 miles of anadromous fish habitat. Most of this important foundation work has been funded by CALFED, CVPIA, California Department of Fish and Game, and Pacific Gas and Electric Company and includes: engineering investigations for screens and ladders and for decommissioning select diversion dams, biological investigations -- including development of a comprehensive biological technical plan, hydrologic and water temperature investigations -- including development of an independent hydrologic and economic model, extensive biological and environmental monitoring, and establishment of a local watershed conservancy.

Battle Creek is a cold, spring-fed stream with exceptionally high flows during the dry season (250 cfs) making it the only Sacramento River tributary resistant to catastrophic droughts. Its remote, deep-shaded gorges are similar to the once-productive salmon streams now blocked by Shasta Dam. Extensive historical records document Battle Creek's enormous potential for all four races of salmon and steelhead. Indeed, USFWS's Anadromous Fish Restoration Plan Working Paper predicts that correcting fishery problems on Battle Creek could support the following populations of anadromous fish.

Battle Creek Anadromous Fish Runs	Increases
Winter-run chinook salmon	2,50
Spring-run chinook salmon	2,500
Steelhead Trout	5,700
Fall-run chinook salmon	4,500
Late fall-run chinook salmon	4,500

[1] The Battle Creek Working Group includes stakeholder representatives from the state and federal resource agencies, and fishery, environmental, local, agricultural, power, and urban stakeholder communities.

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Who Is Negotiating?: Negotiating parties for restoration actions affecting hydropower facilities and their operation include: National Marine Fisheries Service, US Fish and Wildlife Service, California Department of Fish and Game, US Bureau of Reclamation, and Pacific Gas and Electric Company.

What Is Being Negotiated?: The negotiations are focusing on restoring over 42 miles of anadromous fish habitat by correcting fishery problems associated with hydropower diversion dams due to ineffective fish ladders, unscreened diversions, and inadequate streamflows. In total, eight diversion dams are being assessed for laddering and screening or alternatively, for decommissioning. The parties have held 3 negotiating sessions since late-September and will reconvene on December 10th.

The Resource Agencies are pleased to report that significant progress has been made in closing the gaps between the current restoration proposals being negotiated. Significant outstanding issues include the appropriate remedy for one diversion site, and the methodology used to determine appropriate compensation for purchasing water. In developing their proposal, the Resource Agencies have been guided by CALFED's Draft Recommended FY 99 Priorities and the goals identified in the Draft Strategic Plan for Ecosystem Restoration. The Resource Agencies have been particularly mindful of CALFED's priority for rehabilitating the natural capacity and functional connectivity of the Bay/Delta estuary and its watershed as the preferred method for achieving recovery and continued conservation of native species.

Recommendation: As discussed above, considerable work has been accomplished in the past two years to make the project ripe for funding in FY 99. Further, the project is timely since Pacific Gas and Electric Company has indicated that it will ultimately divest its hydrogeneration facilities from the regulated utility business, either via transfer to an unregulated Pacific Gas and Electric Corporation subsidiary or sale on the open market. Pacific Gas and Electric Company's willingness to work cooperatively towards a cost effective and equitable resolution for both hydropower and fisheries may not be shared by subsequent owners. Accordingly, we respectfully ask that you consider establishing Battle Creek as a directed program for FY 99. We believe directed program status is appropriate since the negotiated package will be unprecedented in scope by addressing all of the outstanding CVPIA Anadromous Fish Restoration Plan and CALFED Stage I Battle Creek actions in a single funding decision.

It is anticipated that approximately $30-$35 million will be needed after Pacific Gas and Electric's cost share is considered. Approximately half of these monies will be needed to address facility improvements (decommissioning facilities, new screens, new ladders, or new piping to eliminate redundant screening requirements and mixing of North and South Fork Battle Creek waters) and half will be needed to pay for foregone energy production (note that acquisition of Battle Creek flows was explicitly cited as an example of an appropriate use of monies earmarked to the FY 98 water acquisition reserve account of $14 million). Finally, we believe that it would be appropriate to specify a deadline for the negotiating parties to submit the negotiated proposal for your consideration to ensure that FY 99 monies are not inappropriately set aside in case negotiations are not concluded in a timely manner.